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APRIL 16, 1984
CHEMICAL & ENGINEERING

NEWS

1983 ACS Annual Report
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Biotechnology

Out of the lab and into the marketplace
Page 11

Cover: Wolf Hanisch, manager of process development at Cetus Corp., uses 250-L fermenter to scale up production of enzymes

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CHEMICAL & ENGINEERING NEWS

APRIL 16, 1984

News of the Week

■ **Long-range transfer of electrons in proteins shown by scientists at Caltech.** **Page 6**

■ **Despite inclement weather more than 8000 attended the ACS meeting in St. Louis.** **Page 7**

■ **ACS task force recommends 40 steps to improve education in chemistry.** **Page 7**

■ **Photos taken at national meeting—people, equipment, St. Louis landmarks.** **Page 8**

■ **Dow Chemical purchases stock in three companies.** **Page 9**

■ **OSHA proposes a further reduction in the permissible level of exposure to asbestos.** **Page 9**

■ **OTA criticizes standards for groundwater protection from hazardous wastes under RCRA.** **Page 10**

■ **NIH initiates program on proper use of animals in research.** **Page 10**

International Business

Canadian chemical firms continue to show profits as economic conditions improve in the industrialized world. **Page 21**

Government

Federal government's role in transferring technological know-how to business and industry still has not been determined. **Page 23**

Annual Report

ACS highlights for 1983 include decision to launch journal in colloid chemistry, purchase of conference center. **Page 27**

Science

Genes isolated from human and from mouse T-cells are shown to code for protein similar to light-chain immunoglobulins. **Page 51**

Lower rates available for ACS Journals Online searching after 6 PM; largest metal alloy cluster known, consisting of 13 gold and 12 silver atoms, made at AT&T Bell Laboratories. **Page 52**

Priestley Medal Address

Medalist Linus C. Pauling discusses the nature of the world of tomorrow as affected by scientists and nonscientists. **Page 54**

Books

"U.S. Energy Policy: Crisis and Complacency" faults the Reagan Administration for lack of energy policy objectives. **Page 58**

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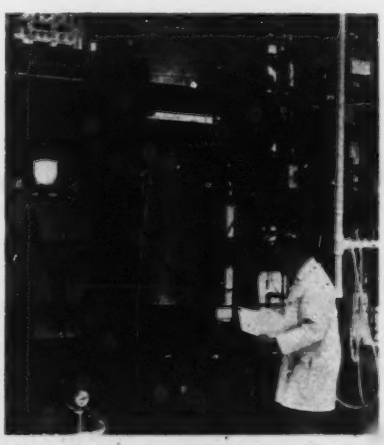


News Focus

Biotechnology firms now face their investors; decisions on research development must take into account marketability, profit potential. **Page 11**

drawn up licensing agreements with a number of European and Japanese pharmaceutical companies.

Other companies are attempting to implement similar strategies. The process of redefining a company along commercial rather than research lines can perhaps best be seen in the example of Cetus Corp., based in Emeryville, Calif. Cetus has redrawn its business plans extensively in the past two years. A lack of product focus in the early 1980s made Cetus the whipping boy for many analysts, who accused the company of committing the classic blunder of pursuing scientific leads without regard to realistic business potential. The lingering image created at that time clearly still rankles company executives. But Cetus believes it has rectified its earlier errors.

In 1982, the company hired a new president: Robert A. Fildes, a veteran of Bristol-Myers and president for two years of Biogen in the U.S. Fildes, who has the reputation of being a hard-headed businessman, promptly slashed half the company's projects and reset the priorities on the others. Cetus now devotes 70% of its resources to health care products (55% in therapeutics and 15% in diagnostics); 15% to agricultural products; 10% to industrial processes; and 5% to exploratory research. Before, the company had focused some 80% of its resources on the industrial area.

Cetus business plan for its health care products is to sell its monoclonal antibodies and DNA probe diagnostic tests for sexually transmitted diseases and cancer itself (either by sales force or, as is the case now with the company's cytomegalovirus test, mainly by telemarketing and direct mail advertising, or via distributors) worldwide. The company also plans to market worldwide a line of automated systems for research and clinical applications. It has the first, a laboratory liquid handling system, on the market now.

"Near term, the instruments will provide a substantial part of Cetus revenues," notes Robert E. Havranek, Cetus vice president for operations and administration. But neither those nor diagnostics will provide the kind of revenues Cetus sees in human therapeutics. "I think we can safely say that diagnostics are chosen as a short-term goal to generate revenues," Havranek says.

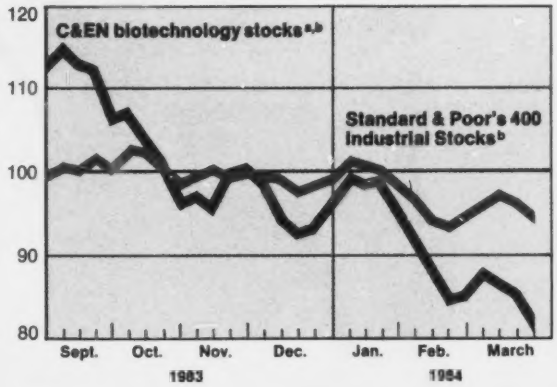
Biotechnology firms' stocks have fared poorly since last fall

For most of the new biotechnology-based companies, selling shares in their equity on the public stock market has been the largest single source of finances. In the 1982–83 bull market, more than $1 billion was invested in the new offerings of the unproved firms. So when biotechnology finance executives think about the next round of financing, they think about the price of their stock.

Since last fall, that has been gloomy work. Biotechnology stock prices, as indicated by C&EN's biotechnology stock index, were performing far better than those of the Standard & Poor's 400 Industrial Stocks last September. In the general slaughter of high-technology stocks last fall, the biotechnology issues tumbled rapidly. Since early November, they have not performed as well as the S&P 400.

The steep decline is the result of both the overall stock market's woes and investor impatience with biotechnology-based companies. "A lot depends on what the overall market does," comments Janice LeCocq of Montgomery Securities. "As long as the overall market remains cynical and antsy about anything high tech, biotech is going to feel that in spades," she adds.

Biotechnology stock prices have tumbled since last September . . .



a Based on stock prices for Amgen, Applied Biosystems, Biogen, Centocor, Cetus, Damon Biotech, Enzo Biochem, Genentech, Genetic Systems, Genex, Hybritech, Molecular Genetics, Monoclonal Antibodies, and Novo Industri. b Reindexed to average for Sept.-Dec. 1983 period to show relative change.

. . . and many stocks are now near bottom of their 52-week range

	Recent price[a]	52-week range High	52-week range Low
Amgen	$ 5 3/4	$18	$ 5 5/8
Applied Biosystems	18 1/4	21 1/2	13
Biogen	12 7/8	22 1/2	9 3/4
Bio-Response	12	16 1/8	9 1/8
Bio-Technology General[b]	6	10	5
California Biotechnology	10	14	10
Centocor	9 1/4	20	9 1/4
Cetus	11 3/8	19	10 1/4
Collaborative Research	7 7/8	15 1/2	6 1/8
Damon Biotech	7 1/4	17 1/2	6 3/4
Enzo Biochem[b]	17 1/2	34 1/4	13
Genentech	37	49 3/4	25 7/8
Genetic Systems	6	17 3/4	6
Genex	12 1/8	23 1/4	12 1/8
Hybritech	13 1/2	31	12 1/4
Molecular Genetics	13	23	10 7/8
Monoclonal Antibodies	10 3/4	21 1/2	10 1/4
Novo Industri	46	73 1/2	45 1/2

a As of Friday, April 6, close. b Adjusted for split.

Canadian Chemicals See Rising Demand

Canadian chemical companies are coming off a year that saw production up, plant operating rates higher, and operating losses turned into profits.

The Canadian economy, if not booming, is still moving forward this year and pulling demand for chemicals along with it. Although forecasters differ about the absolute rate, the economy, they agree, likely will continue to grow this year.

In the U.S., the major export market for Canadian chemicals, the economy still is surging, which bodes well for Canadian chemical exporters. Elsewhere in the industrialized world, improved economic conditions are expected to help Canadian chemical exports recapture 1981 levels.

However, Canadian chemical leaders still are apprehensive about a government energy policy that threatens to prevent their industry from reaching the potential that they believe it has. A long-awaited and well-publicized report by a petrochemical task force has been submitted to Ottawa, but so far there has been no indication that government leaders are heeding the warnings and advice that it contains.

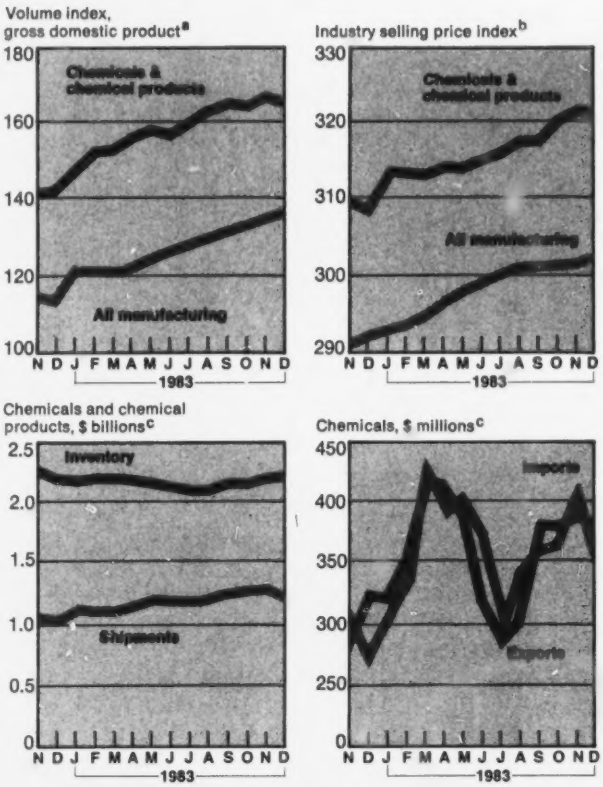
Specifically, the task force report calls for market-responsive prices for petrochemical feedstocks, which means, in effect, lower up-front taxes on raw materials. It also calls for government financial assistance to Petromont and Petrosar, the two financially troubled basic petrochemical producers in Montreal and Sarnia, respectively. These two companies, which use primarily oil-based feedstocks, have been hurt more than most by both the recent economic slowdown and government energy pricing policies. They need assistance to convert their units to other feedstocks.

Instead of an immediate indication of the government's intention to help, the chemical industry received another shock when Gulf Canada said that it was dropping its one-third stake in Petromont. The two remaining partners, Union Carbide Canada and a company owned by the Quebec provincial government, will own and operate debt-ridden Petromont jointly.

Until the troubles plaguing Petromont and Petrosar are solved, Canadian chemical leaders will continue to feel uneasy about their future because these troubles are symptomatic of troubles throughout the entire industry. Even the natural-gas-based petrochemical industry in western Canada says it needs better feedstock prices to remain competitive.

This uneasiness, however, will be tempered over the short haul at least by the fact that demand for most chemicals continues to increase. In the last half of the year, a string of new, world-scale plants (ethylene, ethylene glycol, polyethylene, and styrene) will come on stream in Alberta, swelling Canada's production totals for these major petrochemicals.

Earl Anderson, New York



a Seasonally adjusted, 1971 = 100. b 1971 = 100. c Canadian dollars.
Source: Statistics Canada

Chemical output has rebounded strongly

Production, thousands of metric tons	1983	1982	1981	% change 1982–83
ORGANICS				
Ethylene	1196	1013	1330	18.0%
Propylene	715	693	671	3.1
Benzene	580	519	572	11.7
Toluene	411	470	480	−12.7
Xylene	432	431	409	0.4
PLASTICS				
Polyethylene, low density	412	376	410	9.5
Polyethylene, high density	211	194	223	8.8
Polyvinyl chloride	248	193	222	28.4
INORGANICS				
Nitric acid	855	977	1158	−12.5
Phosphoric acid[a]	656	553	744	18.6
Sulfuric acid	3686	3131	4117	17.7
Ammonia, anhydrous	2688	2508	2854	16.1
Ammonium phosphate	1259	1027	1365	22.6
Chlorine	1385	1233	1292	12.3
Sodium hydroxide	1528	1367	1458	11.7

a 100% P_2O_5. Source: Statistics Canada